AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A solid catalyst for ethylene polymerization, ~~which uses, as~~ comprising a magnesium halide ~~source,~~ derived from a magnesium compound represented by a formula $(RMgX)_p(MgX_2)_q$, in which R is an alkyl group having from 3 to 12 carbon atoms, X is halogen, and the molar ratio of q to p is ~~in the range of from larger than 0 to 1~~ between 0 and 1.

2. (currently amended) The solid catalyst ~~for ethylene polymerization as claimed in~~ of claim 1, ~~characterized in that~~ wherein the molar ratio of q to p is in the range of from 0.05 to 0.95.

3. (currently amended) The solid catalyst ~~for ethylene polymerization as claimed in~~ of claim 1, ~~characterized in that~~ wherein X in the magnesium compound is chlorine.

4. (currently amended) A process for preparing the catalyst for ethylene polymerization ~~as claimed in~~ of claim 1, ~~characterized in that~~ wherein said process comprises the steps of:

(1) reacting powdered magnesium with an alkyl halide of formula RX in an ether solvent to form a magnesium compound having a structure ~~represented by~~ of formula $(RMgX)_p(MgX_2)_q$, in which R is an alkyl group having from 3 to 12 carbon atoms, X is halogen, and the molar ratio of q to p is ~~in the range of from larger than 0 to 1~~ between

0 and 1, wherein the molar ratio of the powdered magnesium to the alkyl halide is from 1:1 to 1:3;

(2) impregnating the magnesium compound onto silica carrier and drying to ~~give silica loading the~~ provide a magnesium compound-loaded silica support, wherein the silica is used in such an amount that per gram silica loads from 0.5 to 5.0 mmol of magnesium element;

(3) reacting ~~the silica loading~~ the magnesium compound-loaded silica support ~~as prepared in~~ of step (2) with an alkyl halide of formula R^1X, in which R^1 is an alkyl group having from 3 to 12 carbon atoms and X is halogen, in an alkane solvent to give a product, wherein ~~the alkyl halide is used in such an amount that~~ the molar ratio of Mg in the magnesium compound to the alkyl halide is in the range from 1:1 to 1:10;

(4) reacting the product obtained from step (3) with a titanium compound and an alkyl aluminum compound to form a main catalyst component, wherein the titanium compound has a structure represented by formula $Ti(OR^2)_mCl_{4-m}$, **[[**where**]]** R^2 is an alkyl group having from 1 to 4 carbon atoms and m is from 0 to 4, ~~and the titanium compound is used in such an amount that~~ the molar ratio of the Mg in the magnesium compound to the Ti in the titanium compound is in the range from 1:0.15 to 1:2.5, and wherein the alkyl aluminum compound has a structure represented by formula $R^3_nAlCl_{3-n}$, **[[**where**]]** R^3 is an alkyl group having from 1 to 14 carbon atoms and n is from 1 to 3, ~~and the alkyl aluminum compound is used in such an amount that~~ the molar ratio of the Mg in the magnesium compound to the Al in the alkyl aluminum compound is in the range from 1:0.08 to 1:3; and

(5) contacting the main catalyst component with a cocatalyst component to form the catalyst for ethylene polymerization, wherein the cocatalyst component is an organo-aluminum compound, and the molar ratio of the Ti in the main catalyst component to the Al in the cocatalyst component is in the range from 1:30 to 1:300.

5. (currently amended) The process according to claim 4, ~~characterized in that~~ wherein the molar ratio of q to p is in the range of from 0.05 to 0.95.

6. (currently amended) The process according to claim 4, ~~characterized in that~~ wherein X in the magnesium compound is chlorine.

7. (currently amended) The process according to claim 4, ~~characterized in that~~ wherein the ether solvent is aliphatic hydrocarbyl ethers, aromatic hydrocarbyl ethers or cyclic ethers.

8. (currently amended) The process according to claim 7, ~~characterized in that~~ wherein the ether solvent is diethyl ether, di-n-propyl ether, di-n-butyl ether, di-isobutyl ether, diphenyl ether, methyl phenyl ether, tetrahydrofuran, or mixture thereof.

9. (currently amended) The process according to claim 4, ~~characterized in that~~ wherein the organo-aluminum compound is triethyl aluminum, diethyl aluminum chloride, triisobutyl aluminum, tri-n-hexyl aluminum, or mixture thereof.

10. (currently amended) The process according to claim 4, ~~characterized in that~~ wherein the alkyl halide of formula RX and formula R^1X is an alkyl chloride.

11. (currently amended) The process according to claim 10, ~~characterized in that~~ wherein the alkyl halide of formula RX and formula R^1X is independently chloropropane, chloro-n-butane, isobutyl chloride, isopentyl chloride or mixture thereof.

12. (currently amended) The process according to claim 4, ~~characterized in that~~ wherein the titanium compound is titanium tetrachloride, tetrabutyl titanate, methoxy titanium trichloride, butoxy titanium trichloride, or mixture thereof.

13. (currently amended) The process according to claim 4, ~~characterized in that~~ wherein the alkyl aluminum compound is triethyl aluminum, triisopropyl aluminum, triisobutyl aluminum, tri-n-hexyl aluminum, tri-n-octyl aluminum, tri(2-ethylhexyl) aluminum, diethyl aluminum chloride, ethyl aluminum dichloride, diisopropyl aluminum chloride, ethyl aluminum sesquichloride, butyl aluminum sesquichloride, or mixture thereof.

14. (currently amended) The process according to claim 4, ~~characterized in that~~ wherein the alkane solvent is an paraffin hydrocarbon.

15. (currently amended) The process according to claim 14, ~~characterized in that~~ wherein the alkane solvent is isopentane, hexane, n-heptane, octane, nonane, decane, or mixture thereof.

16. (currently amended) A process for preparing the catalyst for ethylene polymerization ~~as claimed in~~ of claim 1, ~~characterized in that~~ wherein said process comprises the steps of:

(1) reacting powdered magnesium with an alkyl halide of formula RX in an ether solvent to form a magnesium compound having a structure ~~represented by~~ of formula $(RMgX)_p(MgX_2)_q$, in which R is an alkyl group having from 3 to 12 carbon atoms, X is halogen, and the molar ratio of q to p is ~~in the range of from larger than 0 to 1~~ between 0 and 1, wherein the molar ratio of the powdered magnesium to the alkyl halide is in the range from 1:1 to 1:3;

(2) impregnating the magnesium compound onto silica carrier and drying to ~~give silica loading the~~ provide a magnesium compound-loaded silica support, wherein the silica is used in such an amount that per gram silica loads from 0.5 to 5.0 mmol of magnesium element;

(3) reacting ~~the silica loading~~ the magnesium compound-loaded silica support ~~as prepared in~~ of step (2) with a titanium compound and an alkyl aluminum compound to give a product, wherein the titanium compound has a structure represented by formula $Ti(OR^2)_mCl_{4-m}$, where R^2 is an alkyl group having from 1 to 4 carbon atoms and m is from 0 to 4, and ~~the titanium compound is used in such an amount that~~ the molar ratio of the Mg in the magnesium compound to the Ti in the titanium compound

is in the range from 1:0.15 to 1:2.5, and wherein the alkyl aluminum compound has a structure represented by formula $R^3_nAlCl_{3-n}$, where R^3 is an alkyl group having from 1 to 14 carbon atoms and n is from 1 to 3, and ~~the alkyl aluminum compound is used in such an amount that~~ the molar ratio of the Mg in the magnesium compound to the Al in the alkyl aluminum compound is in the range from 1:0.08 to 1:3;

(4) reacting the product obtained from step (3) with an alkyl halide of formula R^1X, in which R^1 is an alkyl group having from 3 to 12 carbon atoms and X is halogen, in an alkane solvent to form a main catalyst component, wherein ~~the alkyl halide is used in such an amount that~~ the molar ratio of Mg in the magnesium compound to the alkyl halide is in the range from 1:1 to 1:10; and

(5) contacting the main catalyst component with a cocatalyst component to form the catalyst for ethylene polymerization, wherein the cocatalyst component is an organo-aluminum compound, and the molar ratio of the Ti in the main catalyst component to the Al in the cocatalyst component is in the range from 1:30 to 1:300.

17. (currently amended) ~~Use of the~~ A polymerization process, comprising contacting ethylene and the catalyst ~~as claimed in~~ of claim 1 ~~in the polymerization of ethylene~~.

18. (currently amended) The ~~use as claimed in~~ polymerization process of claim 17, ~~characterized in that~~ wherein the main catalyst component is suspended in a mineral oil to form a slurry for the polymerization of ethylene, and said main catalyst component comprises from 20 to 30 percent by weight of the slurry.